REMARKS

Claims 1-6 are pending. Claims 1-3 and 6 have been amended. No new matter has been introduced. Reexamination and reconsideration of the present application are respectfully requested.

In the January 29, 2003 Office Action, the Examiner rejected claims 1, 2, 4, and 5, and objected to claims 3 and 6. The Examiner rejected claims 1 and 2 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,508,991 to Onigata et al. (the Onigata reference). The Examiner rejected claims 1, 2, 4, and 5 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,487,149 to Yokoi et al. (the Yokoi reference). The Examiner objected to claims 3 and 6 as being dependent upon a rejected base claim, but indicated that they would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These rejections are respectfully traversed.

The present invention relates to an optical disk recording apparatus for recording desired information onto an optical disk having wobbled recording tracks. The optical disk recording apparatus is capable of high-accuracy wobble extraction and pre-pit detection during recording.

Independent claim 1, as amended, recites:

> a push-pull signal generation circuit arranged to generate a push-pull signal based on a reflected-light detection signal representative of a reflection of the recording light beam off the optical disk; and
>
> a *gain variation circuit arranged to vary gain of either the reflected-light detection signal in response to modulation of the recording light beam* or the

push-pull signal generated by said push-pull signal generation circuit in response to modulation of the recording light beam, to thereby suppress a level variation of the push-pull signal caused by the modulation of the recording light beam.

The Onigata reference is directed to an optical head servo device in an optical recording and reproducing apparatus. The servo device performs a servo operation to follow the track of an information recording disc and a temporal variation of a reproduction signal even when the light output power of an optical head is changed over in accordance with the operation modes, such as reproduction, recording, and erasing.

The Onigata reference does not disclose, teach, or suggest the circuit of independent claim 1, as amended. Unlike independent claim 1, as amended, the Onigata reference does not disclose a *gain variation circuit arranged to vary gain of either the reflected-light detection signal in response to modulation of the recording light beam* or the push-pull signal generated by said push-pull signal generation circuit in response to modulation of the recording light beam. The Onigata reference teaches that gain of a push-pull signal is adjusted by gain controller 184; however, the control signal applied to gain controller 184 is a tracking error signal (col. 2, lines 1-21) and not a *signal* responsive *to modulation of the recording light beam*, as recited in independent claim 1, as amended. Accordingly, applicants respectfully submit that independent claim 1, as amended, distinguishes over the Onigata reference.

The Yokoi reference, alone or in combination with the Onigata reference, does not make up for the deficiencies of the Onigata reference. The Yokoi reference is directed to an optical recording method for an optical disk having a disk surface portion

in which pre-pits, indicative of pre-format information, are formed. In the optical recording method, a portion of a data signal that matches one of the pre-pits and corresponds to a write mark radially adjacent to one of the pre-pits is detected. Marks are recorded along a track of the disk by selectively using one of an optimal recording power and a proper recording power level, in accordance with the non-match portion or the match portion of the data signal. A radial width of the marks recorded in accordance with the match portion of the data signal is smaller than a radial width of the marks recorded in accordance with the non-match portion of the data signal. An optical reproducing method is adapted to accurately detect a wobble signal and a pre-pit signal from the optical disk to which data is recorded by the above optical recording method. Further, a wobble/pre-pit detection method for optical recording and reproduction is adapted to accurately detect the wobble signal and the pre-pit signal from the optical disk.

The Yokoi reference does not disclose, teach, or suggest the circuit of independent claim 1, as amended. Unlike independent claim 1, as amended, the Yokoi reference does not teach a *gain variation circuit arranged to vary gain of either the reflected-light detection signal in response to modulation of the recording light beam* or the push-pull signal generated by said push-pull signal generation circuit in response to modulation of the recording light beam. The Yokoi reference shows a circuit that detects a pre-pit or wobble; however the automatic gain control (AGC) circuits 73a-73d that the Examiner suggests as corresponding to a gain variation circuit receives amplified output detection currents from photodiodes passed through amplifiers (col. 15, lines 47-62) and do not receive a *signal* responsive *to modulation of the recording*

light beam, as recited in independent claim 1, as amended. Accordingly, applicants respectfully submit that independent claim 1, as amended, distinguishes over the Yokoi reference.

Claims 2, 4, and 5 all directly depend from independent claim 1, as amended. Accordingly, applicants respectfully submit that claims 2, 4, and 5 also distinguish over the above-cited references for the reasons set forth about with respect to independent claim 1, as amended.

Claims 3 and 6 have been rewritten in independent form including all of the limitations of the base claim and any intervening claims. Accordingly, applicants respectfully submit that independent claims 3 and 6, both as amended, are in condition for allowance.

An Information Disclosure Statement (IDS) including four (4) references is also being submitted concurrently herewith for consideration by the Examiner.

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Applicants believe that the foregoing amendments place the application in condition for allowance, and a favorable action is respectfully requested. If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call either of the undersigned attorneys at the Los Angeles telephone number (213) 488-7100 to discuss the steps necessary for placing the application in condition for allowance should the Examiner believe that such a telephone conference would advance prosecution of the application.

Respectfully submitted,

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please delete the paragraph at page 6, lines 1-3 as follows:

[Fig. 9 is a circuit diagram showing principal circuitry of an optical disk recording apparatus in accordance with a third embodiment of the present invention;]

IN THE CLAIMS:

Please amend claims 1-3 and 6 as follows:

1. (Amended) An optical disk recording apparatus for recording information onto an optical disk having a wobbled recording track by irradiation of a recording light beam having power modulated in accordance with a recording signal, said optical disk recording apparatus comprising a push-pull signal processing circuit including:

a push-pull signal generation circuit arranged to generate a push-pull signal [on the basis of] based on a reflected-light detection signal representative of a reflection of the recording light beam off the optical disk; and

a gain variation circuit arranged to vary gain of either the reflected-light detection signal in response to modulation of the recording light beam or the push-pull signal generated by said push-pull signal generation circuit in response to modulation of the recording light beam, to thereby suppress a level variation of the push-pull signal caused by the modulation of the recording light beam.

2. (Amended) An optical disk recording apparatus as claimed in claim 1

wherein said gain variation circuit varies the gain of the reflected-light detection signal between a mark forming section and a blank forming section of the recording signal or the push-pull signal between a mark forming section and a blank forming section of the recording signal.

3. (Amended) An optical disk recording apparatus [as claimed in claim 2] for recording information onto an optical disk having a wobbled recording track by irradiation of a recording light beam having power modulated in accordance with a recording signal, said optical disk recording apparatus comprising a push-pull signal processing circuit including:

a push-pull signal generation circuit arranged to generate a push-pull signal based on a reflected-light detection signal representative of a reflection of the recording light beam off the optical disk; and

a gain variation circuit arranged to vary gain of either the reflected-light detection signal or the push-pull signal generated by said push-pull signal generation circuit in response to modulation of the recording light beam, to thereby suppress a level variation of the push-pull signal caused by the modulation of the recording light beam,

wherein said gain variation circuit varies the gain of the reflected-light detection signal or the push-pull signal between a mark forming section and a blank forming section of the recording signal, and [wherein] said gain variation circuit varies the gain, in response to the mark forming section of the recording signal, in accordance with a time-axial length of the mark forming section.

6. (Amended) An optical disk recording apparatus [as claimed in claim 5] for recording information onto an optical disk having a wobbled recording track by irradiation of a recording light beam having power modulated in accordance with a recording signal, said optical disk recording apparatus comprising a push-pull signal processing circuit including:

a push-pull signal generation circuit arranged to generate a push-pull signal based on a reflected-light detection signal representative of a reflection of the recording light beam off the optical disk;

a gain variation circuit arranged to vary gain of either the reflected-light detection signal or the push-pull signal generated by said push-pull signal generation circuit in response to modulation of the recording light beam, to thereby suppress a level variation of the push-pull signal caused by the modulation of the recording light beam; and

a pre-pit detection circuit including

a comparator arranged to compare an output signal of said push-pull signal processing circuit with a predetermined threshold value for detection of a pre-pit formed in the optical disk,

[wherein said pre-pit detection circuit includes:]

a first peak value detection circuit arranged to detect a peak value of the output signal of said push-pull signal processing circuit[;],

a filter circuit arranged to extract [the] a wobble signal component out of the output signal of said push-pull signal processing circuit[;],

a second peak value detection circuit arranged to detect a peak

value of an output signal of said filter circuit[;], and

a threshold value setting circuit arranged to set, as the threshold value, an optionally-selected value between the peak value detected by said first peak value detection circuit and the peak value detected by said second peak value detection circuit.